

REMARKS

Claims 1-43 are pending in the present application. Claims 1-7, 9-13, 15-21, 23-27 and 29-40 have been amended herewith. Reconsideration of the claims is respectfully requested.

I. 35 U.S.C. § 103, Obviousness

A. The Examiner rejected Claims 1-7, 9-11, 13-21, 23-25 and 27-43 under 35 U.S.C. § 103 as being unpatentable over Menon et al (U.S. 5,537,488) in view of Glommen et al (U.S. 6,393,479). This rejection is respectfully traversed.

The present invention of Claim 1 is directed to an improved technique for selecting data sets for use with a predictive algorithm. A statistical distribution of a training data set is compared with a statistical distribution of a testing data set to identify a discrepancy between these distributions with respect to data network geographic information. Based upon such comparison and its associated discrepancy identification, selection of entries in the training data set and/or testing data set is modified. These modified entries are then used by the predictive algorithm, thereby taking into account the influences of data network geography when using the predictive algorithm. This invention is substantially different from the teachings in both of the cited references used in rejecting Claim 1. Generally speaking, the cited Menon reference teaches a pattern recognition system, where multiple training input patterns from multiple classes of subjects are grouped into clusters within categories. After training, the categories are defined by class based upon a peak class for the categories. During testing, frames of test data from a subject are correlated with the category definitions to determine a closest correlated category. This cited reference makes no mention of (i) data network geographic information, or (ii) use of data network geographic information *to modify* entries of the testing or training data sets used by a predictive algorithm. Generally speaking, the cited Glommen reference teaches an analysis tool that follows the traffic flow internal to a web site, where the state of a visitor's browser is recorded and data relating to the path visitors take through the web site is collected and studied. This cited reference makes not mention of use of data network geographic information *to modify* entries of the testing or training data sets used by a predictive algorithm.

Because neither reference teaches or otherwise suggests the particular claimed *use* of data network geographic information - such data network geographic information being used *to modify* entries of the testing or training data sets used by a predictive algorithm - it is respectfully

submitted that the Examiner has failed to properly establish a prima facie showing of obviousness with respect to Claim 1¹. Accordingly, the burden has not shifted to Applicants to overcome an obviousness assertion². In addition, as a proper prima facie showing of obviousness has not been established, Claim 1 has been improperly rejected³.

The present invention of Claim 41 is directed to an improved technique for *predicting customer behavior*. As a part of predicting customer behavior, data network geographic information for a plurality of customers is obtained, and a predictive algorithm is trained using such data network geographic information. This predictive algorithm is used to predict customer behavior based on this data network geographic information. None of the cited references teach or suggest any type of customer behavior prediction, either as expressly recited in the claims or otherwise. Thus, a prima facie case of obviousness has not been properly established by the Examiner with respect to Claim 41, and therefore the burden has not shifted to Applicants to rebut the obviousness assertion.

Specifically with respect to Claim 1, such claim recites "generating a second statistical distribution of a testing data set". As can be seen, a distribution of a testing data set is generated. Importantly, this claimed step is not merely with respect to generating a testing data set, but rather to generating a *distribution* of a testing data set (this is in addition to generation a distribution of a training data set). In rejecting this aspect of Claim 1, the Examiner states that this step of generating a distribution of a testing data set is taught by Menon at Col. 20, lines 60-63. Applicants urge that there, Menon states:

"receiving at least one input test pattern of the data type from a subject during a testing operation;
computing a correlation between a category definition and each test input pattern"

¹ To establish prima facie obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art (emphasis added by Applicants). MPEP 2143.03. See also, *In re Royka*, 490 F.2d 580 (C.C.P.A. 1974).

² In rejecting claims under 35 U.S.C. Section 103, the examiner bears the initial burden of presenting a prima facie case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). Only if that burden is met, does the burden of coming forward with evidence or argument shift to the applicant. *Id.*

³ If the examiner fails to establish a prima facie case, the rejection is improper and will be overturned. *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

It is noted that the category definition is not a *test* input pattern, but rather is associated with the *training* input patterns (Menon col. 20, lines 50-54). Thus, the passage cited by the Examiner in rejecting the testing data set distribution generation step merely states that a correlation is computed between a received test pattern and the training pattern category definition. Such correlation does not result in any type of distribution with respect to a plurality of test input patterns. Rather, this correlation is described by Menon as being the determination of a *distance* between a pattern and an existing category (Menon col. 1, lines 29-31). This significance of this missing claimed step comes into focus when viewing the next step of Claim 1, as now described.

Further with respect to Claim 1, such claim recites a step of "comparing the first statistical distribution and the second distribution to identify a discrepancy between the first statistical distribution and the second distribution with respect to data network geographical information". As can be seen, this step is directed to *comparing of two distributions* (a first distribution and a second distribution) in order to identify a discrepancy between these distributions *with respect to the data network geographic information*. Such step advantageously facilitates an ability to modify selection of entries in one or more of the training data set and the testing data set based on such discrepancy, and to use such modified selection of entries by the predictive algorithm. In rejecting this aspect of Claim 1, the Examiner resorts to two different passages, one from each of the cited references. The Examiner alleges that Menon teaches the claimed comparing step to identify discrepancies between the first distribution and the second distribution at col. 20, lines 61-64. Applicants urge that there, and as previously described above, Menon states that a correlation/distance is computed between a category definition and each test input pattern. This passage does not teach any type of compare step being performed with respect to *two different distributions of data sets* – (1) a first distribution of a training data set and (2) a second distribution of a testing data set. Rather, a correlation is computing between (i) a category definition and (ii) an actual test input pattern (e.g. a test pattern is not a distribution of test patterns or a distribution of a testing data set). Quite simply, such computed correlation is not with respect to distributions of two different data sets – a training pattern data set and a test pattern data set – as expressly recited in Claim 1. Thus, at least for this reason (missing claimed step of comparing two data set *distributions*), a *prima facie* case of obviousness has not been established with respect to Claim 1.

Still further with respect to this claimed comparing step, this claimed comparing step is done to *identify a discrepancy* between these two distributions *with respect to* data network geographic information. Thus, the two data set distributions *and* the data network geographic information are synergistically used together to identify a discrepancy between these two distributions with respect to the data network geographic information. The Examiner acknowledges that the cited Menon reference does not teach any type of comparing with respect to data network geographic information, but states that the cited Glommen reference teaches "an Internet traffic flow analysis system which monitor (sic) the travel of visitors through websites". Applicants urge that even if true, such generalized statement does not establish a teaching or suggestion of a specific use for data network geographic information, the specific use being to *identify a discrepancy between these two distributions with respect to data network geographic information*. Because one reference is alleged to teach the two distributions (although it in fact does not, as described above), and another reference is being cited as teaching the claimed data network geographic information, it necessarily follows that there is no teaching of *the synergistic co-action that is expressly recited between all of these items* (first distribution, second distribution, data network geographic information). Because none of the cited references teach *any* type of synergistic co-action between a first distribution, a second distribution and data network geographic information, it necessarily follows that the *specific* synergistic co-action between these three items is also not taught or otherwise suggested. For example, Glommen teaches that his traffic analysis results are recorded in a log file/cookie (col. 1, lines 63-64; col. 5, lines 2-10), such that the data can be viewed and analyzed (col. 5, lines 11-14), in order for the website owner to *monitor web site traffic patterns in real time*. Thus, Claim 1 is still further shown to have been improperly rejected, as a proper prima facie case of obviousness has not been established.

Still further with respect to Claim 1, Applicants urge that the cited references have been combined using improper hindsight analysis. It is error to reconstruct the patentee's claimed invention from the prior art by using the patentee's claims as a "blueprint". When prior art references require selective combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight obtained from the invention itself. *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 227 USPQ 543 (Fed. Cir. 1985). Because Menon' teachings are directed to pattern recognition of features of innate objects - and is not in

anyway related to determining or using data network characteristics such as data network geographic information – there would have been no motivation to combine the teachings of such dissimilar and non-related teachings, which are non-analogous art. Still further, when an obviousness determination is based on multiple prior art references, there must be a showing of some “teaching, suggestion, or reason” to combine the references. “...absence of such suggestion to combine is dispositive in an obviousness determination”. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573, 42 USPQ2d 1378 (Fed. Cir. 1997). The Examiner states that Menon would use Glommen’s internet traffic tool to create a traffic flow testing and training data set which would predict customer’s travel behavior through the Internet, and advertisers would use this internet traffic tool to better target advertisement to the users (emphasis added). These statements by the Examiner further evidence improper hindsight analysis, as neither the teachings of Menon nor Glommen are directed to (i) targeting advertisement to Internet user’s, or (ii) any type of travel behavior prediction. This reasoning for combining such non-analogous teachings must therefore be coming from Applicants’ own patent specification, which again is improper hindsight analysis. *Interconnect Planning Corp. v. Feil*, supra.

Applicants have thus shown that the cited references have been improperly combined (non-analogous art and improper hindsight analysis), and even with such improper combination, there are still missing claimed elements (use of data network geographical information to identify discrepancies, and modifying one or more data sets based upon such discrepancies) – strongly evidencing non-obviousness of Claim 1.

Applicants initially traverse the rejection of Claims 2-7, 9-11, 13 and 14 for reasons given above with respect to Claim 1 (of which these Claims 2-7, 9-11, 13 and 14 depend upon).

Further with respect to Claim 2, Applicants urge that none of the cited references teach or suggest the claimed feature of “wherein the first statistical distribution and the second distribution are distributions of a number of data network links from a customer data network geographical location to a web site data network geographical location”. As can be seen, the distributions (which are compared, per Claim 1) are with respect to *data network links*, the data network links being *between a customer data network geographic location and a web site data network geographic location*. In rejecting Claim 2, the Examiner states that “Menon teaches the method of claim 1”, which Applicants note is itself erroneous since Claim 1 is being rejected

under 35 USC 103 using two references. More importantly, the Examiner further states in rejecting Claim 2 that Menon fails to teach the specific feature recited in Claim 2, but states that the cited Glommen reference teaches "an Internet traffic flow analysis system, which monitors the travel of visitors through websites". Applicants urge that even if such general assertion were true, this general assertion does not teach or otherwise suggest the specific features recited in Claim 2 – that *the distributions which are compared are with respect to data network links between a customer location and web site location*. Thus, it is further urged that a proper prima facie case of obviousness has not been established with respect to Claim 2, as a teaching of monitoring travel of visitors between websites does not each or otherwise suggest two distributions being compared, where the two distributions which are compared are with respect to *data network links between a customer location and web site location*, as expressly recited in Claim 2.

Further with respect to Claim 3, such claim recites "The method of claim 1, wherein the first statistical distribution and the second distribution are distributions of a size of a click stream for arriving at a web site data network geographical location". As can be seen, Claim 3 is directed to comparing distributions that are each distributions of a *size of a click stream for arriving at a web site*. This is in contrast to Claim 2, where the distributions that are compared are distributions of data network links between a customer location and web site location. While Claims 2 and 3 recite two very different types of distributions being used in a compare step – data network links between two locations (Claim 2), and the size of a click stream for arriving at a web site (Claim 3) – the Examiner uses the same broad, general categorization that the cited Glommen reference teaches "an Internet traffic flow analysis system, which monitors the travel of visitors through websites" in rejecting both claims. This evidences that the Examiner is not considering the specific different types of distributions being recited by Claim 2 and Claim 3, further evidencing that a proper prima facie case of obviousness has not been established with respect to Claim 3 (as there are specific claimed features which are not taught or suggested by either reference). It is thus further urged that Claim 3 has been erroneously rejected under 35 USC 103.

Further with respect to Claim 4, such claim recites "wherein comparing the first statistical distribution and the second distribution includes comparing one or more of a mean, mode, and standard deviation of the first statistical distribution to one or more of a mean, mode, and

standard deviation of the second distribution". As can be seen, *both distributions* which are being compared – the first distribution and the second distribution – are either a mean, mode or standard deviation of such distributions. In rejecting Claim 4, the Examiner cites Menon col. 6, line 57 – col. 7, line 20 as teaching these two distributions. Applicants urge that there, Menon states:

"After the set of training patterns has been completely processed as described above to form the clusters, each category is labeled with a class name. In the preferred embodiment, the categories are labeled according to the class bin counts. A category may be labeled as its peak class or it may be labeled an unknown class depending upon the degree to which the peak class dominates the cluster of the category. To make this determination, a cluster class contrast CC_c is computed for each category by taking the number of training patterns for the peak class N_{PEAK} and subtracting the average number of patterns for the remaining classes N_{MEAN} . The result is normalized by dividing this difference by the total number of patterns N_{TOTAL} in the cluster. That is,

$$CC_c = (N_{PEAK} - N_{MEAN}) / N_{TOTAL}$$

Thus, the class contrast for a cluster formed from a single class will be unity. The class contrast for a cluster in which no single class dominates will be close to zero, since the difference between the peak and the mean will be very small.

After the entire training set has been processed, the class bin counts for each cluster are plotted to form a training class histogram for each category. FIG. 1 schematically depicts a typical category training class histogram. This category was the best match category for a total of 200 training patterns. Of these 200 patterns, 60 were from class A, 40 were from class B and 150 were from class C. Class C is the peak class of the category; and $N_{PEAK} = 150$, $N_{MEAN} = 50$ and $N_{TOTAL} = 250$. Therefore, the class contrast CC_c is given by

$$CC_c = (150 - 50) / 250 = 0.4."$$

While this cited passage may discuss processing of *training* patterns in a training set, Claim 4 goes further is also includes a *distribution of a testing data set* (which is in addition to a training data set distribution). The single cited passage used in rejecting Claim 4 makes no mention of any type of testing data set, but instead merely describes a training data set, and thus it necessarily follows that this cited passage does not teach or otherwise suggest a mean, mode or standard deviation of a second distribution (the second distribution being defined in Claim 1 as a distribution of *testing data sets*). Thus, it is further urged that Claim 4 has been erroneously rejected, as a proper *prima facie* case of obvious has not been established due to such missing claimed features.

Still further with respect to Claim 5, such claim recites "wherein the first statistical distribution and the second distribution are distributions of a weighted data network geographical distance between a customer data network geographical location and a web site data network geographical locations". As can be seen, the two distributions are defined in this claim to be distributions of a *weighted data network geographic distance* between a customer location and web site location. The Examiner has not established, or even alleged, any teaching in any cited reference that teaches or otherwise suggests weighted distance distributions, and thus has failed to establish a *prima facie* showing of obviousness with respect to Claim 5.

Still further with respect to Claim 6, such claim recites "wherein the first statistical distribution and the second distribution are distributions of a weighted click stream for arriving at a web site data network geographical locations". As can be seen, the two distributions are defined in this claim to be distributions of a *weighted click stream* for arriving at a web site. The Examiner has not established, or even alleged, any teaching in any cited reference that teaches or otherwise suggests weighted click stream distributions, and thus has failed to establish a *prima facie* showing of obviousness with respect to Claim 6.

Further with respect to Claim 9, Applicants urge that none of the cited references teach (or otherwise suggest) the claimed step of "comparing at least one of the first statistical distribution and the second distribution to a distribution of a customer database". As can be seen, this claim is directed to comparing one or more of the first and second distributions *with another distribution* – the distribution of a customer database. The cited Menon reference does not teach (or otherwise suggest) a *distribution* of a customer database, and hence it necessarily follows that it does not teach (or otherwise suggest) any comparing step being made with such

(missing) distribution of a customer database. In rejecting Claim 9, the Examiner cites Menon col. 6, line 57 – column 7, line 21 and col. 5, lines 35-50. Applicants urge that the col. 6 passage describes details of how to group training patterns into categories in order to generate a training histogram, as claimed by Menon in Claim 24, col. 20, lines 55-60. This passage deals with training patterns and the labeling of these training patterns' associated categories. The calculations described are *only with respect to training patterns* – albeit organized into different groups or categories. Importantly, there is no teaching (or suggestion) of comparing such training patterns to a *distribution of a customer database*, as expressly recited in Claim 9. The passage cited by the Examiner at col. 5 does not overcome this teaching deficiency. This passage also describes training pattern processing (as did the cited passage at col. 6), and this passage does not teach any type of *distribution of a customer database*, or the *comparing* of a testing data set distribution or a training data set distribution with such (missing) customer database distribution. Thus, it is further shown that a *prima facie* case of obviousness has not been established with respect to Claim 9.

Further with respect to Claim 10, such claim recites "wherein the first statistical distribution and second statistical distribution are frequency distributions of number of data network links between a customer geographical location and one or more web site data network geographical locations, and size of a click stream for arriving at one or more web site data network geographical locations". As can be seen, both the first distribution and the second distribution are frequency distributions of *both* (1) links between locations *and* (2) click stream size. Because none of the cited references teach comparing two distributions, where the distributions are either frequency distributions of links (as described above with respect to Claim 2) or size of click stream (as described above with respect to Claim 3), it necessarily follows that none of the cited references teach or suggest comparing two distributions, where *both* the first distribution and the second distribution are frequency distributions of *both* links between locations *and* click stream size. Thus, it is further shown that a *prima facie* case of obviousness has not been established with respect to Claim 10.

Still further with respect to Claim 11, Applicants urge that none of the cited references teach or suggest the claimed steps of "generating a composite data set from the training data set and the testing data set", or "generating a composite distribution from the composite data set". As can be seen, this claim recites that two things are generated – a composite data set and a

distribution of such generated composite data set. In rejecting Claim 11, the Examiner cites Menon col. 4, lines 1-15 and col. 40, lines 40-45 as teaching both of these claimed steps. As to the cited passage at Menon col. 4, this passage states that histograms of the data-type-specific observation classes are fused together – specifically a *voice observation histogram* with a *video observation histogram*. In contrast, Claim 11 is directed to generating a composite data set from the testing data set and the training data set, *and then*, generating a composite distribution from such composite data set (generated from the testing data set and training data set). Quite simply, the merging of observation data histograms as taught by Menon is very different from the merging of testing and training data sets. This is due to at least two different reasons. First, the cited passage teaches the merging of two distributions (histograms), whereas Claim 11 is directed to generating a composite data set from two data sets *and then* generating a distribution from the resulting composite data set. Secondly, observation data histograms are very different from the claimed testing and training data sets, and therefore a teaching by Menon of merging observation data histograms does not teach or otherwise suggest generating a composite data set from the training data set and testing data set. Thus, this cited passage at col. 4 does not teach or otherwise suggest the features cited in Claim 11. As to the cited passage at Menon col. 40, *and as previously pointed out in the previous response to Office Action* (page 19 of the Response to Office Action dated 4/14/05), Menon does not have a col. 40, as it ends at col. 22. Hence, the Examiner has failed to establish a *prima facie* showing of obviousness with respect to Claim 11.

With respect to Claims 15-21, 23-25 and 27-40, Applicants initially traverse for similar reasons to those given above with respect to Claim 1.

Applicants further traverse the rejection of Claims 16 and 30 for similar reasons to those further reasons given above with respect to Claim 2.

Applicants further traverse the rejection of Claims 17 and 31 for similar reasons to those further reasons given above with respect to Claim 3.

Applicants further traverse the rejection of Claims 18 and 32 for similar reasons to those further reasons given above with respect to Claim 4.

Applicants further traverse the rejection of Claims 19 and 33 for similar reasons to those further reasons given above with respect to Claim 5.

Applicants further traverse the rejection of Claims 20 and 34 for similar reasons to those further reasons given above with respect to Claim 6.

Applicants further traverse the rejection of Claims 23 and 36 for similar reasons to those further reasons given above with respect to Claim 9.

Applicants further traverse the rejection of Claims 24 and 37 for similar reasons to those further reasons given above with respect to Claim 10.

Applicants further traverse the rejection of Claims 25 and 38 for similar reasons to those further reasons given above with respect to Claim 11.

With respect to Claim 39, Applicants urge that such claim recites "wherein the fourth instructions for modifying selection of entries in one or more of the training data set and the testing data set include instructions for changing one of a random selection algorithm and a seed value for the random selection algorithm". In rejecting Claim 39 (page 5 of the present Office Action dated 6/24/05), the Examiner states that Menon teaches training a predictive algorithm using at least one of the training data set and the testing data set if the discrepancy is within a predetermined tolerance at col. 1, lines 30-35. Applicants respectfully submit that Claim 39 is not directed training a predictive algorithm, as alleged by the Examiner in rejecting such claim. Rather, Claim 39 is directed to details of how to *modify the selection of entries* for the training and/or testing data sets. Thus, the Examiner has failed to properly establish a *prima facie* showing of obviousness with respect to Claim 39, as neither Menon nor Glommen teach or otherwise suggest this missing claimed feature of entry selection modification, nor has the Examiner even alleged such teaching or suggestion. Thus, Claim 39 has been erroneously rejected.

With respect to Claim 41 (and similarly for Claims 42 and 43), such claim is directed to *predicting customer behavior based on data network geographical influences*, and specifically recites steps of (i) obtaining data network geographical information regarding a plurality of customers, (ii) training a predictive algorithm using the data network geographical information, and (iii) *using the predictive algorithm to predict customer behavior* based on the data network geographical information. None of the cited references teach any type of *customer behavior prediction*. The cited Menon reference does teach use of an algorithm, but such algorithm is not used to predict customer behavior, but instead is used for pattern matching. The cited Glommen reference teaches data analysis in real time, but is not directed to any type of customer behavior prediction. Thus, it is urged that a *prima facie* case of obviousness has not been established with respect to Claim 41 (and similarly for Claims 42 and 43).

Therefore, the rejection of Claims 1-7, 9-11, 13-21, 23-25 and 27-43 under 35 U.S.C. § 103 has been overcome.

B. The Examiner rejected Claims 8 and 22 under 35 U.S.C. § 103 as being unpatentable over Menon et al (U.S. 5,537,488) in view of Glommen et al (U.S. 6,393,479) and further in view of Malik (US 6,842,782). This rejection is respectfully traversed.

Applicants initially traverse such rejection for similar reasons to those given above with respect to Claim 1 identified above, including missing claimed features and an improper combination of references.

Still further, the Examiner states in rejecting Claim 8 that the cited Malik reference teaches keeping track of click-through purchase data. Even if true, it is urged that none of the cited references teach or otherwise suggest the specific use of customer data as recited in Claim 8. Claim 8 specifically states that *both the training data set and the testing data set* (for which distributions are generated, and compared) *are selected from a customer information database* comprising information with respect to customers who have purchased any of goods and services over a data network. None of the cited references teach or otherwise suggest this specific type of use of customer data, and thus it is urged that Claim 8 has been erroneously rejected as there are missing claimed features not taught or suggested by the cited references.

Therefore, the rejection of Claims 8 and 22 under 35 U.S.C. § 103 has been overcome.

C. The Examiner rejected Claims 12 and 26 under 35 U.S.C. § 103 as being unpatentable over Menon et al (U.S. 5,537,488) in view of Glommen et al (U.S. 6,393,479) and further in view of Graupe (US 5,920,852). This rejection is respectfully traversed.

Applicants initially traverse such rejection for similar reasons to those given above with respect to the missing claimed features of Claim 1 identified above.

Still further, Claim 12 is directed to changing a random selection algorithm or seed. In rejecting Claim 12, the Examiner cites Graupe as teaching use of a random selection algorithm. An allegation of mere use of an algorithm does not teach or otherwise suggest changing the algorithm itself, as expressly recited in Claim 12. Thus, a prima facie case of obviousness has not been established with respect to Claim 12, and thus Claim 12 has been erroneously rejected.

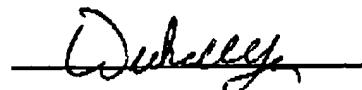
Therefore, the rejection of claims 12 and 26 under 35 U.S.C. § 103 has been overcome.

II. Conclusion

It is respectfully urged that the subject application is patentable over the cited references and is now in condition for allowance. The Examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the Examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

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Respectfully submitted,



Duke W. Yee
Reg. No. 34,285
Wayne P. Bailey
Reg. No. 34,289
Yee & Associates, P.C.
P.O. Box 802333
Dallas, TX 75380
(972) 385-8777
Attorneys for Applicant